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ART. I. *Observations on the Treatment of Delirium Tremens, and on the use of the Warm Bath in that Disease.* By THOMAS H. WRIGHT, M. D. Physician to the Baltimore Alms-house Infirmary.

THE means commonly employed in the treatment of temulence and delirium from intemperance, were uniformly successful in the Baltimore Alms-house Infirmary, in a multitude of cases, for two years antecedent to the spring of the present year, 1829. Those means were emetics—afterwards mild cathartics, (Epsom salts and magnesia,) in cases complicated with gastric and biliary derangements, or much febrile disorder; the evacuants followed promptly by anodynes, graduated in force or repetition, by the amount or persistence of nervous disturbance. In cases of the disorder already arrived at the stage of per vigilant delirium, misnamed “mania a potu,” (as is correctly remarked by Dr. COATES,) if high vascular tumult attended, we here also employed an emetic, afterwards a nauseant, tartar solution—as a sedative, and concurrently with the effects of the latter, opiates, in doses designed to enforce sleep, made full, and renewed so frequently as to have the effect of each successive dose to come in aid of the impression of those preceding.

The opiate employed was Dover's powder, xij. grs.—or pure opium, one to two grains—or laudanum, forty drops—or black drop, x. gtt.; the interval of exhibition usually two hours, but regulated by the symptoms. Where sensorial and nervous irritation were greatly exalted, attended by deficient reaction, and signs of general atony, small, quick pulse—cold surface—livid complexion, &c. all evacuants and direct sedatives were omitted, and the patient entered at once upon the use of opiates. But here the doses were made smaller than

in those cases where the sum of vital power was less obviously deficient or expended, and the force of opiate was graduated as nearly as possible to the torpor or exhaustion of the functions of general life. Here too cordials of the vinous or spirituous class were allowed, concurrently with the employment of the opiates; and it was to this stage of temulence that spirits and stimulant drinks of all kinds was restricted. It was only in cases where the tumultuous excitation of the cerebral and nervous functions was found associated with cold congestive torpor of the distributive system, or with a low, irritative grade of excitement, tending to rapid collapse, that we deemed it either medically or morally right, to renew even the temperate use of the primary agents of the disorder.

In emetics, then, nauseants, anodynes, and cordials, regulated or combined in their exhibition by the character of cases falling under treatment, we had for a long time found efficient and unfailing means of controlling the various forms of temulence and delirium a potu. In no case of temulence advanced to the stage of delirious excitation, did we find emetics alone induce sufficient restraint of the cerebral and nervous derangements, to allow perfect tranquillity of mind, or sound sleep. Vomiting often took off much of the hallucination of the patient, and substituted some intelligence for previous total folly; but there was a constant tendency to relapse into mental error, and we found it better to confirm the advantage gained from the emetic, by calling in the aid of opiates afterwards, rather than await the return of the delirious paroxysms, and trust to subdue them by repeated emetics. The possible consequences of vomiting as a debilitating mean, suggests a caution in the repetition of emetics in temulent cases; and confidence in their permanent or final efficacy in those cases, is abated by the fact, that it is not uncommon to find some of the worst forms of delirium tremens, complicated with, and aggravating under, almost constant spontaneous vomiting.

In cases of temulence with strong vascular action, which vomiting did not sufficiently calm, or where in such cases emesis was deemed improper, nauseants were employed in the form of drinks, charged with medicines of that class, sometimes tartar, or ipecacuan, or zinc. This given for some hours, seemed often to prepare the nervous system for a favourable impression by opiates, and we had frequent reason to infer, that after this mode of previous treatment, we succeeded in inducing quiet and sleep, with smaller and fewer doses of opiates, than in cases where such preparation was omitted or deemed unsuitable.

The opiate course of treatment did not always succeed without difficulty, and sometimes not without an auxiliary of the sedative class. Cases of vigilant delirium which had resisted opiates singly, in full doses, repeated two, three, or four times, at intervals of one to two hours, were sometimes quieted by a liberal portion, eight to ten grains, of camphor, added to the next opiate dose. In a few instances, where opium alone, or in combination with camphor, had been used freely and diligently, without producing either quiet or sleep, the addition of musk to the opiate has seemed suddenly to suspend the general temulent irritation, and sound sleep has soon followed. We have tried various modes of exhibiting the opiate in temulence, hoping to find some rule for its use, combining the greatest efficiency with the smallest quantity of the agent. We have administered it in half-grain doses, repeated every thirty minutes, and in doses of one grain every hour—again beginning with half a grain, we have doubled the dose at every exhibition, in the ratio of compound increase, as far as we dare carry it on this rule. Each of those plans has succeeded; but my experience leads me decidedly to prefer half-grain doses of opium, or an equivalent in laudanum, repeated every half hour. The plan of doubling the dose at every exhibition, with the view of multiplying equally or more, the sum of quieting influence, often disappointed my expectations, and it was frequently necessary to arrest the experiment, and retrograde in the dose toward the first quantum.

The form of opiate employed in temulence seems sometimes to influence the result, as well as the amount. The pulv. Doveri answered well in habits giving an inflammatory character to the grade of excitement associated with temulence, but from its tendency to depress the tone of stomach, impair the appetite, and occasionally to vomit, as often as repeated, it sometimes became necessary to withdraw it before sufficient opiate impression had been made. Even where its depressing or disturbing effect upon the stomach did not interfere with its continuance, it seemed to conduce to sleep less than an equal quantum of good opium or laudanum. Pure, dry opium, (the older the better, if well kept,) was long esteemed by us our surest antidote. In this disorder, however, experience taught us, that in obstinate cases, varying the form of the agent was sometimes productive of benefit. In one case, where opium of the best quality had been exhibited to the amount of sixteen grains in twelve hours, without the smallest indication of submission to its influence, fifteen drops of black drop, at one dose, was followed by sleep in thirty minutes, which lasted, with a single interruption of a few moments, fourteen hours.

The web of the black spider has received commendation from many

respectable sources, as a sedative agent, capable of calming with peculiar ease and certainty, morbid excitability of the cerebral and nervous systems. On the credit of those qualities it has been employed in the various forms of temulence, and not without a share of reputed success, sufficient to entitle it to consideration in that state of constitutional irritation. In the summer of 1827 we tried this article in many cases, and in full doses. To test its qualities, it was given, where the state of the patient admitted, uncombined with opiates. When thus used, its effects were generally partial or doubtful, and its powers inadequate to the production of tranquillity or sleep. In one case only, have I found this substance to exert great or decided sedative attributes. This was the case of an intelligent young man, (in private practice,) who, after consuming, by his own report, three quarts of brandy, in thirty-six hours, fell into a state of temulent excitation so excessive, that he was incapable of keeping a recumbent, or even a sitting posture, for more than a moment, but paced his chamber with a ceaseless step for two days and nights. He was not delirious, on the contrary his conversation was rational, though hurried and vehement. But he was so far under the influence of spectral hallucination, that if he closed his eyes for a moment, day or night, he was instantly visited by a host of phantoms of frightful aspect;\* hence chiefly his aversion to lie down, or make any voluntary effort to sleep. This patient took opium, opium with camphor, and black drop, at short intervals, and in full doses, until the quantum of opiate, approached the utmost limit of probable safe administration, without even partial relief of constitutional irritation, or any apparent proneness to sleep. The temulent excitement kept unabated for twenty-four hours, the second night passed in constant vigilance, locomotion, and mental excitement, and it seemed probable that excitation so intense, protracted, and unremitting; must soon lapse into delirium or convulsions. At this time, the morning of the third day, (the second of my attendance,) he began the use of the fresh web in pills of five grains every hour. Its effect was prompt and unequivocal. He calmed, even sensibly to himself, with every dose, and watched with desire for the time of repeating the pills. The first effect of the web was to abate his restless movements about the room, he became disposed to sit down, and kept his chair, with short intervals of walking, for some hours. In the evening he consented

\* Among the delusions practised by imagination on reason, the impulse to self-destruction was predominant; a catastrophe said to have been unhappily realized in less than a year after, while confined in one of the public institutions on account of derangement from drink.

to go to bed, got up once or twice, but returned to bed without difficulty, took an opiate at night, the first for eighteen hours, and slept continuously for eight hours. The cure was completed without difficulty, by repeating the web less frequently next day, quiet, suitable nourishment, and another opiate at night. The patient spoke emphatically, both the first and second day, of the soothing influence produced by the pills. He was not at the time informed of their composition.

On the general plan, and by the agents indicated in the preceding outline, we had for two years uniformly triumphed over the multitude of temulent affections, which in slight or severer forms, almost daily enter the wards of our institution. The result of a few cases of the disorder, admitted in the spring of the present year, 1829, showed us the error of counting on the infallibility of the means of past success, and diminished, perhaps unduly, our confidence in agents so frequently sufficient for our purpose. In June of this year we had three cases of *delirium tremens*, in which the power of sedatives and opiates, combined with our best judgment, and administered with all our skill, was found unequal to cope with the disease, and we incurred defeats the more unpleasant because novel and unexpected. The first of those cases exhibited the disorder of the cerebral and nervous functions, associated with high tumult of the vascular system; countenance wild and flushed; pulse full; skin dry and hot; tongue foul; patient reported to have been two days and nights without sleep. The treatment was commenced by emesis, afterward nauseants, tartar in barley water, until febrile excitement was somewhat dissolved, then the opiate course in full doses. Dover's powder, twelve grains, forty minutes interval; solid opium in doses of two or three grains, one hour distant; and finally, strong laudanum, thirty drops in twenty minutes, were successively exhibited with punctuality, without any good effect. Per vigilance, agitative tremor and *delirium* increased, and the patient died in twenty-four hours after admission, exhausted by excessive unremitted mental excitation, and temulent struggles.

The second was a case of relapse, or rather of the disorder renewed with multiplied intensity. The patient had been admitted with temulence in its forming stage, cerebro-nervous irritation below the grade of *delirium*, but tending to that consummation. He was put alone, and treated, (after a mild emetic,) by opiates of medium doses. He tranquillized readily, slept great part of the first night, was rational next morning, and eat breakfast with good appetite. In the evening he was removed from the cell to the general infirmary, where he slept well, and was so much himself on the day after as to engage voluntarily and actively all day in assisting the nurse of the

infirmary to wait on the sick. On the second night of his stay in the infirmary, he awoke late at night with a cry of terror, expressed vehement dread of some vague danger, and became so agitated, (temulent,) that it was necessary to transfer him again to solitary confinement. His case soon reached the acmé of sensorial disorder. Acute phantomic delirium became established, attended by extra vigilance and a low grade of febrile irritation; pulse small and quick, countenance dark, tongue red and dry, surface cold. The unfortunate result of the case just preceding, had created suspicion that the fatal event might be resolved either into the loss of time devoted to the reduction of excitement, by the emetic and nauseants, or in part to that cause and to the too tame use of opiates afterwards. To give the opiate full scope, it was resorted to in the present instance; at once and freely. A bolus of opium and camphor, (2 grs. and 4 grs.) was given every hour, until the quantum of opiate taken had reached eighteen grains: its exhibition was then arrested to await its effects. After an interval of three hours, and neither quiet nor sleep appeared at all likely to ensue from what had been taken, four grains, full weight, of opium was given at one dose. The effect of this experiment of doubling the dose after so much previous opiate exhibition, was looked for with anxiety. An hour after its administration the patient was more excited and restless than before, and soon went into convulsions which never ceased till death. The third case was in the low ataxic form of muttering stolidity, comprehending nothing and expressing nothing distinctly, constantly catching at spectres, and turning up the bed clothes and bed after some visionary object of search. It was treated by cordials and opiates, with stimulants, wine whey, laudanum with spt. ammon; stimulant anodyne enemata, laudanum and tinct. scetid. in warm water. The case ended fatally, by slow exhaustion, on the third day.\* Period of temulence before admission, not known.

Dissection, in the first case, revealed universal injection of the vascular series of the encephalon, both in the membranes and medullary body; excess of serosity over the surface of the brain and between the tunics; no sanguineous extravasation. In the stomach, fine red injection around both orifices, florid patches in the

\* This man was for the most part unable to swallow, but after holding substances for some time in his mouth, they would suddenly drop out, while he appeared making efforts to convey them into the stomach; as if the nerves of the tongue and pharynx were paralyzed by congestion or effusion at their root.

mucous tissue, no lesions elsewhere. In the second case, the state of the encephalon and stomach exhibited something of engorgement and phlogosis, but the marks of congestion in the brain, and of irritation in the stomach, were sensibly less than in the first subject. The small intestine was much inflated in this case, and in one part, the jejunum, for eight inches, the coats of the bowel were loaded by extravasated blood, (ecchymosis.) The quantity of blood infiltrated into the cellular tissue of the coats of the bowel, chiefly on the side of the tube next the wall of the belly, was very considerable, and had the appearance of interstitial hæmorrhage by contusion. There was no appearance of bruise on the outside of the abdomen, and it was not known whether the patient had been hurt in any way by a fall, blow, or other accident. The third subject betrayed no other pathological phenomena, than a very loaded state of the sinusses of the brain and of the veins of the cerebellum. The medullary substance of the latter was of very distinct pink colour throughout.

Of numerous cases of temulence, averaging sixty per annum, and a large proportion in its gravest forms, admitted into the house within the two years, ending 1st of July, 1829, those just reported are the only fatal instances; or rather what is meant is, that they are the only instances which have finally resisted treatment. Some other victims of intemperance died in the house within the period mentioned, but these, five or six in number, were cases brought to the house in a state of absolute exhaustion or fatal stupefaction, and have died in a few hours after admission, one or two of them on the road to the institution. One case occurred lately, (in August,) in which the circumstances and the manner of death differed from any former example. A young woman was brought at night to the institution in that state of temulence with terror, called by the nurses and old inmates of the house, the horrors. She was put to bed, a cordial anodyne exhibited, and its repetition at stated intervals charged on the matron of the cells, if the patient did not sleep. In the morning, early, the matron reported to the senior student, that the young woman had slept great part of the night, had waked in the morning calm and cheerful, and after taking breakfast with appetite, had again fallen asleep. In an hour afterwards she came to report, that having gone into the cell to observe if the patient was sleeping, she found her lying in the posture, and with the appearance of sleep, but lifeless. Dissection furnished no satisfactory explanation of the cause of death. The cavities, tissues, &c. were all in their common state, except at one part. The cellular tissue enveloping the left kidney was infiltrated with blood, and extensively stained by red se-

rosity. The senior and associate students engaged in the examination of this woman, report a sensible effluvium of whiskey from the stomach, but a still more distinct and even strong odour of the same liquor from the brain of the subject.

The senior student of the house treated the three cases reported as ending fatally, with particular personal superintendence. They were treated according to general advice given by myself, and with the advantage of knowledge, zeal, and good judgment on the part of the gentleman in charge of them, aided by former observation of the judicious management of similar cases in the Pennsylvania Hospital and Alms-house. After the unfortunate issue of those three cases, it became a question of great interest to this gentleman, (whose station in the house threw most of such cases into his hands,) what means were left us or what could be done to avert similar defeats in future. When consulted in one of the cases reported, which had resisted two and three-grain doses of good opium repeated to three or four exhibitions, about the propriety of pushing the opiate to such absolute force of dose as must decide the alternation of "sleep or death" in favour of the patient, I had expressed strong doubts of the safety of great multiplication or progressive increase of dose in those states of exalted and protracted temulent excitation. I conceived it highly probable that in such cases extra large doses of opiate, might, as a narcotic, suddenly extinguish the remains of sensorial energy, or else, as a stimulant, urge the existing sum of constitutional irritation to a grade of uncontrollable excess, speedily involving convulsions or fatal collapse. The general phenomena of poisoning by opium and some other narcotics, are often very analogous to the symptoms of per acute delirium tremens from drink;\* and it has been long matter of apprehension with me, that our plan of treating high temulence was liable to the serious risk of supplying the train of morbid actions with an impulse fitted to carry them on to direct augmentation. In one of the cases reported above, where eighteen grains of opium, two grains in the hour, had been taken, after suspension of the opiate three hours without the least apparent controul of the symptoms, between four and five grains were given at one dose. The delirium increased, convulsions ensued, and continued until death.

The state of super-excitation in temulence, seems to require agents fitted to soothe without disabling, capable of calming irritation at small expense of power. Evacuants are apt to exhaust too much, stimulants to excite unduly; with both vigour is lost while tumult re-

\* Which often kills, no doubt, purely from narcotism.

mains. On these general principles, our practice has for some time been regulated more strictly than formerly. We have endeavoured to pursue a course adapted to circumstances, combining caution with effect, and interposing in a manner neither too absolute nor too tame. Evacuants, emetics and mild cathartics, if indicated, or injections, if for any reason preferable, were employed as hitherto in cases where the patient was young and stout, the disorder in the first stage, the vascular function active, and gastro-biliary derangements indicated by foul tongue, want of appetite, nausea, &c. If with the evidences of the tonic form of excitement, gastric, or gastro-cephalic irritation predominated in the characters of great sensibility about the stomach, pain of the head, over acute hearing, intolerance of light, flushed face, &c. cupping the epigastrium, the temples, fore and hind head, or all, were to precede, and, in exalted grades of those local derangements, to supersede direct medicinal evacuants. If delirium, per vigilance, or high temulence survived the preparatory treatment described, as they too often do, the warm bath was to be the next resort. The temperature of this agent was regulated by the state of the patient, as a general rule about 90°, its duration to be determined by its effects, always contemplating manifest calming influence before the experiment was arrested. The opiate course succeeded immediately to the bath. Dover's powder or pure opium, in the proportion of one grain to the dose, (or an equivalent in laudanum,) was given every two hours, if necessity continued, to the extent of three, or at most four doses. If this trial with the opiate did not succeed in inducing quiet or sleep, the warm bath was repeated, the patient kept in until sensibly, but not greatly relaxed, and on his coming out of the bath, the opiate again resorted to, but in a retrograde ratio. Instead of renewing now the amount of opiate first employed, the dose was reduced at once to one-half, even more than half if the patient was much languid from the bath, and repeated at intervals of an hour, until sleep was procured.

In cases of the atonic form of temulence with delirium, where the disorder had been longer formed, the vigour of the subject constitutionally small, or subdued by habitual intemperance, sensorial and nervous irritation abounding, with a small, quick, undeveloped pulse, skin cold or covered with mucous perspiration, in short, in cases combining the asthenic and irritative forms of the disease, all evacuation by vomiting or purging was pretermitted. Here moderately stimulating injections were employed until stools were procured, cups applied to the head or epigastrium, or both, if gastric and encephalic super-irritation were present, the warm bath, and after its use, opiates,

in force of dose and frequency of exhibition, regulated by the seeming indications for a prompt or gradual impression. In every modification of the class of cases under consideration, the atonic or asthenic forms of temulent delirium, the doses of opiate were comparatively small, never exceeding the ratio of one grain to the hour, and reduced from that amount if tranquillity or sleep was not consummated by the first three or four doses. Always before commencing the use of the diminished doses of the opiate, the warm bath was repeated, and it generally, in fact almost uniformly, happened that after repetition of the bath, the reduced doses, (half proportions,) displayed more composing and greater hypnotic influence than the previous full doses had accomplished; often succeeding perfectly in the same number of doses as had failed altogether on the first trial with double the quantity of opiate.

This result became so manifest and so often repeated, that the students of the institution fell into the habit of exhibiting the opiate in small doses even at first, and going on with them continuously, until the symptoms were subdued. Where the disorder proved obstinate, and the bad symptoms unusually protracted, instead of resorting to large doses of opiate, injections sometimes with tinct. fœtid. or laudanum, cupping,\* or that mean repeated if used before, and renewed warm bathing, were called in as auxiliaries to the opiate course. Cases have occurred in the house in which high delirious temulence has kept on for two and three days and nights, and yielded happily at last to the course indicated. An instance of this sort occurred a few days since, (a foreigner of education and respectable connexions, fallen from his rank by habits of intemperance,) where the disorder wore a character of peculiar exaltation and inveteracy. The man did not sleep nor even lie down for three days and two nights. Incessantly and vehemently declaiming to and of the creatures of his own morbid imagination, he stood shaking under an impulse irresistible and unremitting, which while it rendered both mind and body the sport of its power, seemed to impart superhuman ability to endure the unnatural privation of rest or relaxation. The warm bath frequently repeated, with laudanum renewed continually in doses varying from twenty and thirty down to ten drops, succeeded at last in calming an amount and persistence of tumult, which for

\* Cupping the temples, in high delirium, was followed by cold applications to the head. We have bled from the arm but in two cases, one of stupor, the other remittent convulsions, both with dilated pupil and full pulse. In each the pulse quailed promptly under the flow of blood. Both recovered under subsequent treatment.

a long time appeared likely to intermit only by total expenditure of the vital attributes by which it was sustained. The whole quantity of laudanum exhibited in this case was two hundred drops; two or three ten-grain doses of Dover's powder were given on the night of admission, in anticipation of the laudanum course. In a milder form, the disorder, (temulence with hallucination,) sometimes maintains its partial dominion over the patient for a long period. A man of fat full habit was lately discharged the Alms-house Infirmary, in whom temulent agitation with tendency to delirium continued three weeks. Every day during this period, his limbs were tremulous, his countenance anxious and terror stricken, pulse small and quick, stomach irritable. During all the time whenever he fell asleep, day or night, he was shortly awaked by some indefinable feeling of agitation and alarm, and found himself covered with profuse perspiration. He did not at any time fall into actual delirium, but his confusion of mind was often very great for a few minutes. He was treated by the warm bath daily, and the vegetable bitters with ten-drop doses of laudanum at intervals generally of six hours. He recovered perfectly at last. Throughout the treatment he was constantly solicitous that the indulgence of the warm bath should be continued to him, and spoke strongly of its comforting influence.

Our general design, (as was mentioned,) in the exhibition of the opiate, has been, to procure its tranquillizing influence, by renewing the impression of small doses at short intervals, and thus to multiply opiate power, until we acquire dominion over temulence, without incurring the hazard of a constitutional shock, either by the narcotic or super-excitant force of one or more large doses. In the greater number of cases, the dose of opiate we employ is ten drops of good laudanum,\* at intervals of forty to sixty minutes, and whatever be the result, the dose is rarely raised to twenty drops. Beyond the latter dose we almost never go, and not at any time for more than two or three doses, the larger portions of opiate generally given in the first trials with that mean, and consisting commonly of pulv. Doveri in eight or ten-grain doses. In cases, where, from the long period of vigilance before coming to the institution, the necessity for sleep has become peculiarly urgent, after preparation by injections, cupping if indicated, and the warm bath, we treat with twenty drops of laudanum in succession, at intervals of forty to sixty minutes. After such cases have been brought to acknowledge the influence of the opiate,

\* Laudanum is the most convenient form of opiate in those cases, from the greater facility and certainty of its exhibition to delirious patients.

to the degree of partial sleep or manifest drowsiness, we often reduce the force of that agent, as the symptoms of the disorder yield, and adhering to short intervals of repetition, exhibit the laudanum in portions of ten, or even five drops. Often, very often, do we find reviving vigilance, or the wavering tendency to sleep, converted into sound repose, by the constantly renewed impression of even those very small doses.

There may appear to be good reason, from the force of the disorder, and the active treatment by opiates, generally pursued and often successful, to suspect the plan of management briefly sketched above, as inefficiently tame, and therefore of pernicious tendency. I can only reply, seriously, that I should deem it criminal to misrepresent in such a matter, and that whatever be the speculative probability, the practice described has in reality been eminently successful. I have now before me a report from the senior student of the institution, of which the following is an extract:—

“Of thirty-nine cases of *delirium tremens* and *temulentia*, admitted into the house from the third of July, 1829, till the thirtieth of December of the same year, twenty-five were explicitly delirious. Three of the subjects of it died. One of those entered the institution convulsed, and continued thus till death, which occurred in a few hours. Another was labouring at the time of entrance under apoplectic stupor, and eventuated similarly in a like period. The third was in an extreme state of debility, and died the ensuing morning. In this number the last very singular case admitted is not embraced, but it forms a very striking example. The event is yet unaccomplished.”\*

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\* The case here mentioned by the reporter as “singular,” was briefly as follows. The man when admitted was in total stupor, said to be the effect of hard drinking for some days. Next morning he was highly temulent, shaking in all his limbs. His countenance now expressed consciousness, and when spoken to he moved his lips and tongue, but could not articulate. In the course of the day, after great effort, he sometimes pronounced monosyllables. On the third day, countenance calm and natural, speech still limited to one word; farther effort to speak was either inaudible, or produced interrupted unmeaning murmur. On pressing with my finger on the ligament which covers the exit of the spinal chord through the foramen magnum, the right side of the face became convulsed, and retracted forcibly toward the ear. This spasm and retraction was uniformly repeated when pressure in the neck was renewed, and continued the same for thirty-six hours. The left side of the face pricked freely with a pin, acknowledged no sensation; the right was readily stimulated to contraction by the same mean. The man lost all the marks of temulence after a few days, and gradually recovered the power of speaking short sentences. But even now, ten days after complete general convalescence, any effort to converse beyond a few simple terms, produces apparent chaos of ideas and confusion of language, causing him to utter abruptly unmeaning words, made up of incongruous letters.

"All of them were treated by the same means now always adopted by us, and we believe with particular success. Of the merely temulent cases, none proved fatal."

"Antecedent to the 3d of July, and previous to the system at present established in this institution, out of four cases of delirium tremens successively admitted, three had proved fatal. (These were the cases described in the former part of this memoir.) The plan then was opium, camphor, and musk combined, or some form of opiate exhibited in large doses, and at greater intervals than we now observe. One of them, (of the three cases mentioned,) expired in convulsions, probably induced by the opium, of which three-grain doses, and one dose of four grains, had been administered to the extent of twelve grains. Emetics were succeeded by death in a second of those cases."

"In addition to the above thirty-nine cases, were several of a milder form of the disorder, which did not require very strict medical attention."

"R. J. THOMPSON, *Senior Student*."

If it were asked on what I conceived to rest the main efficacy of the treatment here reported as having almost uniformly overruled temulent delirium in its most grave forms, I should reply, first, the warm bath; secondly, liberal cupping on the abdomen and head, the latter especially. The very temperate opiate course which has followed those means and consummated the cure, I regard as owing its efficiency chiefly to the constitutional preparation, accomplished by the primary and concurrent employment of the former agents. Unaided by those auxiliaries, I conceive the small doses of opiate would often expose to defeat, in a contest with so formidable a disease.

I do not know whether the free and repeated employment of the warm bath, be a new practice in the treatment of delirium tremens. I am not apprised that it has ever been used in that affection, but my information on the modes of treatment in that disorder, derived from reading, is very limited. It has so happened that I have seen none of the essays published on the subject abroad or at home. Some of the latter\* are highly esteemed by the profession, as happily illustrating the pathology of the disorder, and indicating judicious and rational principles of treatment. There is no design in those remarks to attach importance to the question, whether the agent recommended in this memoir be now for the first time used, either partially or freely, as a composing mean in temulent irritation. It is far more interest-

Pressure in the neck no longer causes spasm in the face, and sensation is equal on both sides. During illness, and for some days after, the bowels and bladder were evacuated unconsciously. Treatment—injections, warm bathing, repeated cupping on the head, and small opiates.

\* Essays on "*Mania a Potu*," or "*Delirium Tremens*," by Drs. Klapp, Coates, and others.

ing that it prove beneficial, than to establish for it any pretension to novelty.

There are some extra medicinal considerations connected with the management of delirium tremens, of sufficient consequence, in hospital practice especially, to merit particular attention. As the subjects of this disorder commonly require to be kept alone, in hospitals generally secluded in cells, it is highly important that their place of confinement be as quiet as possible, and capable of being made light or dark at pleasure. But it is even still more important that the receptacles of this class of patients be dry, and susceptible of being ventilated in summer, and warmed comfortably in the damps and cold of autumn and winter. Nothing, not even light and noise, so strongly counteracts the good tendency of the most judicious medical regimen, as a close, damp, or chilling atmosphere, about the subject of delirium tremens. The patient cannot tranquillize—there can be no balance of the sensorial and natural functions, while the nervous and capillary tissues, the exhalent system of the lungs and the skin, are paralyzed by submersion in an atmosphere at once impure, and damp, and cold. Salutary reaction toward the surfaces, the offices of elaboration, and all the constitutional means of equipoise, are utterly hindered under such evils of place and circumstances. A dry air, kept comfortably warm, yet admitting due ventilation, clean, dry, and sufficient personal dress, (if the patient is up,) a dry bed, and sufficient covering, these are almost indispensable to the safety of patients far advanced into constitutional temulent irritation.

Next to comfort of place, personal management is a matter of importance. The hallucination, the wandering impulse and ceaseless motivity of high temulence, suggest an apparent necessity for personal restraint, as well as solitary confinement. Even as a mean of composure, as an auxiliary to the sedative and quieting course of medicines, personal hindrance from motion and effort seem at first view to be necessary, and has often been resorted to in those cases. Hence the tranquillizing chair, the leg chain and the mufflers for the hands, the straight waistcoat for the arms and trunk, and the bed straps to enforce recumbency. These and other means have been employed to prevent the patient from beating the bounds of his cell with restless step and agitated limbs. But every such device is commonly vain. The temulent agitation is no less vehement, because confined within the close embrace of the canvass shirt; muscular action then becomes concentrated, not extinguished. The temporary madman, unconscious of the motive or design of such constraint, feels the incumbrance most sensibly, and from the instinct to be free, strains yet more

and more, and is not likely to relax his efforts, until fatal exhaustion quenches the power to struggle. Of all the means of personal restraint I have seen employed in motive and agitative temulence, my own observation would lead me to retain only the leg chain, confining the patient to a small space near his bed, leaving the trunk, arms, and hands free, and removing out of his reach every thing he could injure, or with which he could hurt himself. I have seen subjects of the disorder, standing up, or lying upon their beds, under the compression of the straight jacket, in whom the tumult of mind had constantly augmented after it was put on, as if to compensate for the bodily controul thereby produced. Those cases long resisted all the agents of quiet employed while the constraint was kept up, and in most instances it became necessary to throw the jacket off before either mind or body could be calmed to rest. An instance occurred lately, in the case of a robust old man, apparently about sixty, whose delirium had been unusually protracted, and of a character to render the temporary use of the jacket necessary.\* We found him standing up, vigilant and excited, without the smallest sign of submission to the opiates which in moderate doses had been diligently administered; he had not lain down since the evening before, and nothing but force would have put him or kept him in bed. He complained much both of the inconvenience and the indignity of the personal controul, and on being asked by the senior student whether he would go quietly to bed if all restraint were removed, he consented to do so. He was set at liberty, lay down, and was reported by the keeper of the cells to have fallen asleep in a few minutes. He was rational next day, and continued well. From all that I have seen of the disorder, our experience appears to warrant the conclusion, that in the warm bath, properly used, we have a most salutary substitute for forcible restraint; a substitute which at the same time that it controuls powerfully, yet soothes while it subdues.

We have made the course of diet for the temulent as simple as possible. Coffee, or chocolate, or milk and bread, for breakfast; rice, gruel, or light vegetable soup for dinner; tea or milk with bread for supper, constitute the common regimen. It has been mentioned before, that laudanum is our general form of opiate in the disorder. This we administer in wine whey, the latter made with wine of good quality, and besides using the whey as a vehicle for administering the opiate, the patients are allowed the same, (except contraindicat-

\* He had been unavoidably placed in a cell with another patient for whose security from annoyance or hurt the constraint was imposed.

ed by the grade of excitement,) as a drink. Beyond this kind and amount of cordial exhibition we never indulge. Spirituous drink of all kind is entirely excluded from our plan of treatment. Formerly we allowed in some cases of the disorder, small quantities of spirits, diluted and sweetened, (toddy,) in connexion with the opiate course, but for a long time we have omitted that mean altogether. No patient, to the best of my knowledge and belief, has suffered from the privation, nor do I think the allowance of spirituous drink in this class of cases, either necessary or judicious; at least such indulgence is by no means generally essential or conducive to the cure.

When first entering on hospital practice, where the temulent form of disorder was like to be frequently encountered, it became a question with me whether I might safely withhold spirituous drink from the subjects of that affection, betraying a predisposition to the disease in its mature stage, namely, prepared to lapse into agitative delirium. The experiment seemed both morally and medically worth making, if it could be done with safety. It was tried and succeeded. With very rare exceptions, liquor, spirits, wine, &c. was kept wholly out of use, and the temulent subject treated by rest, (sometimes confinement to bed for a day or two,) with sufficient allowance of light nutritious food, and generally a small anodyne at night. I have seen no reason to consider this course unsafe, or calculated to give temulent irritation occasion or opportunity of serious aggravation. Very many who come into the wards with bodies agitated and minds somewhat distempered by temulence, on being put to bed, made warm and comfortable, supplied with suitable and sufficient nourishment, and, if required, a medicinal cordial or anodyne, have tranquillized readily, and escaped the further dominion or the full establishment of the disorder. On the whole, I am sincerely convinced that the administration of spirituous drink is not generally necessary or beneficial in temulence, either as a preventive or remedial mean.

On the subject of the medicinal employment of spirituous liquors in general hospital practice, our experience sustains a conclusion of some interest, especially as it relates to the moral and economical aspect of hospital regimen. Our annual summary of cases treated, for twelve months, ending 1st of May, 1828, gives 1873 patients. A similar estimate for the year ending 1st of May, 1829, furnishes 2167 cases. By a report of the agent of supplies for the Alms-house, the whole quantity of liquors ordered for the institution during those two years, was as follows:—

“For the year ending 1st of May, 1828, 50 gallons of wine, 3 barrels of whiskey, 8 gallons of Jamaica spirits, 1 gallon of gin, 1 dozen bottles of porter.

For the year ending 1st of May, 1829, 48 gallons of wine, 2 barrels of whiskey, 7 gallons of gin, 6 gallons of spirits, 2 gallons of French brandy.

"T. R. HAND, Agent."

The "whiskey" mentioned in the report of the agent, was used for various purposes, in the house, chiefly stimulant fomentations, liniments, &c. and for making common tinctures. None of it was administered to patients, except as made into tinctures. There remains then, of wine, spirits, brandy, &c. a total of one hundred and twenty-eight gallons used in two years, with an aggregate of patients in the time amounting to four thousand and forty. In a professional view, the first question which ought to associate itself with such an exhibit, is whether the subjects and diseases of hospital practice will safely admit so restricted employment of stimulant means. If my judgment and experience have not both greatly deceived me, I can conscientiously answer in the affirmative. My real conviction is, that what error we committed in the use of those agents was on the side of indulgence rather than restriction—that we gave too much instead of too little. The total mortality in the institution, for the two years indicated, was 322, number of cases 4040, ratio of deaths about twelve and a half per cent. A result it is conceived not less favourable than has obtained in any similar establishment abroad or at home. The ratio of mortality here given, will be greatly reduced in a medical contemplation, by the fact that the aggregate of deaths reported comprehends one hundred and two cases of pneumotuberculosis, or chronic phthisis pulmonalis.

Baltimore, December, 1829.

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ART. II. *Extraordinary Case of Pregnancy in which the Fetus was Discharged through the Abdominal Parietes.* By JOSEPH A. TOY, M. D. of Virginia.

EARLY on the morning of the 1st of November, 1828, I was desired to visit Mrs. S. W. in the adjoining county, (Warwick,) who was represented as being extremely ill. Dr. FRENCH of this town had also been called on, and we visited her together. On our arrival we found Dr. CORBIN, (of Warwick,) the attending physician, present. Dr. C. has since very politely furnished me with the previous history of the case, from which I learn that the doctor saw her incidentally on the 29th of October, at which time he bled her freely.